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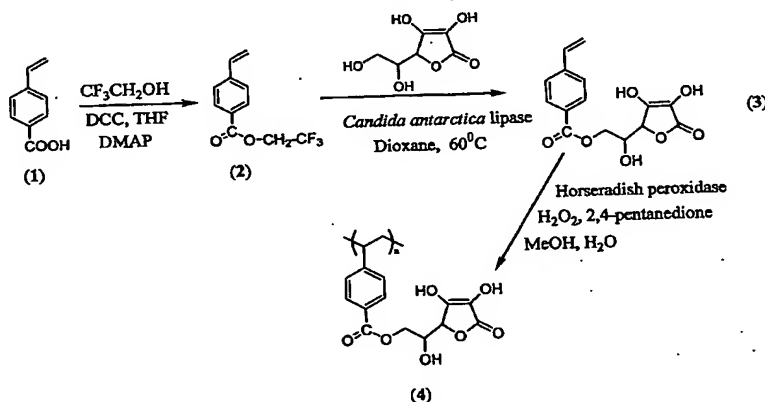
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(54) Title: ANTIOXIDANT-FUNCTIONALIZED POLYMERS



(57) Abstract: Methods and compositions are disclosed for the preparation of free radical scavenging polymers and polymer films functionalized with antioxidants. Enzymatic and chemical tailoring of monomers with antioxidants followed by enzymatic polymerization is described. These antioxidant functionalized polymers can increase shelf life and quality of food products, as well as, increase effectiveness of pharmaceutical agents when used as packaging or as coatings on packaging for oxygen sensitive materials. The novel enzymatic covalent coupling of antioxidants to a polymer enhances the free radical scavenging ability of packaging while also inhibiting the escape of the antioxidants, and thus limiting exposure and/or absorption by an individual. In addition to its use in food or pharmaceutical packaging, methods are disclosed for using the antioxidant coupled polymers in a variety of applications including as coatings on the inside of medical devices, such as stents and catheters, which would substantially reduce free radical damage and/or oxygen depletion during medical procedures. Furthermore, through the coupling of antioxidants to biodegradable polymers, controlled delivery and sustained release of an antioxidant to a subject is possible.

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